Infrastructure Services

Table of Contents

Vision of Action 2
The Infrastructure Services Organization 3
Technical Services 4
Telecommunications 6
Field Services 8
Office Automation Services 10
Data Center Operations 12
Infrastructure Services Alignment 14
History in the Making: A Shared Infrastructure 16
Implementing the Plan - From Vision to Action 18

Infrastructure Services

Patrick Hale, Deputy Director
MDIT Infrastructure Services
State of Michigan

"This plan is our roadmap for crossing the "consolidation finish line" and our compass to push shared services farther than has ever been done...."

Vision of Action

The 2008-2012 Infrastructure Services (IS) Strategic Plan is our roadmap for crossing the "consolidation finish line" and our compass to push shared services farther than has ever been done in the public sector.

Typically considered a background activity, infrastructure rarely takes center stage in an organization's focus. To be sure, there are precious few examples of well-aligned infrastructure plans in the private or public sector from which to draw.

Our Vision

United in Service
Dedicated to Excellence
Empowered to Deliver

Frequently compared to the foundation of a building, the plumbing in a house, even the air that we breathe - whatever your chosen analogy, one thing is certain, not much happens in business or technology without the foundation of IT infrastructure. In Michigan, the communications network, help desk, PC's, mainframes, data centers and, most importantly, the 800 individuals running them are at the heart of our capability to deliver value.

For our state, formal plans for infrastructure can no longer be an elective activity. Citizens and employees demand more from IT than ever before. We continue to face a statewide economic crisis that requires tough decisions every year, and our staff is hungry to know where their efforts fit into the bigger picture. With this backdrop in mind, we carved an infrastructure plan rooted in business need that is detailed enough to set direction for the troops on the ground.

This plan includes specific initiatives over the next five years, but there is more to it than that. We are reaching deep into our organization to find out how things are going and to set clear goals for improvement in the areas of communication, sharing of ideas and solutions, setting priorities, decision making and workplace satisfaction.

The process of developing this plan was a good experience. We have started something that will help us improve on many levels and keep us on track with Michigan's IT goals. Together we have focused around the following vision: "United in Service, Dedicated to Excellence, Empowered to Deliver."

From the top down, we will continue to do the self-evaluation that is necessary, to listen to our staff and to fight the good fight as we face inevitable barriers along the way. Operational excellence is the goal, and this 2008 Infrastructure Services Plan is a critical step in our journey as we push forward.

Foundational Framework

The MDIT foundational framework is a collection of drivers and best practices that define our approach and govern our projects as we deliver on our vision. This framework binds our initiatives and aligns them with the statewide technical direction and MDIT's project portfolio.

Foundational Framework

- **Shared Services:** Leveraging services enterprise wide for ease of access, savings & efficiencies
- **Enterprise Architecture and Security:** Provides the tools, processes and standards to translate business needs into IT solutions securely, efficiently and effectively
- **State Unified IT Environment (SUITE):** Standardized management methodologies, procedures and tools for systems development
- **Service Delivery:** Coordinated application, infrastructure and service delivery enterprise wide
- **Organizational Drivers:** The guiding policies and principles in the 2008-2012 Michigan IT Strategic Plan

2008 Infrastructure Services Leadership Conference

The Infrastructure Services Organization

Michigan has a rich history in technology infrastructure. We were the first state to appoint a CIO and the first to complete telecommunications and mainframe consolidations. We found ways to make progress with the tightest budget conditions in our state's history and recently have delivered on our promise to consolidate 29 data centers in the Lansing area.

Michigan's IT infrastructure is managed by five teams: Telecommunications, Data Center Operations, Office Automation Services, Field Services and Technical Services. These teams are the "face" of IT services in Michigan. They respond to an average of 29,000 calls each and every month from the state's 55,000 employees. IS managers are responsible for an annual budget of over $160 million and provide connectivity to over 1200 locations throughout the state. Every state function, from prison operations to park reservations, is supported and enabled by these five groups.

Planning for the Future

Infrastructure planning cannot be successful if done silo by silo. A data center plan is limited in its effect if the telecommunications network is not there to support it. Likewise, dramatic advancements in PC technology and capability are lost if the teams supporting our end users are not equipped with the necessary skills or tools.

Recognizing this, Infrastructure Services brought leaders from across the organization together and developed a common vision. Looking at customer needs as defined in our strategic plan, studying industry best practices and taking input from our staff, a plan was developed to build the infrastructure today that will meet the needs of tomorrow.

Michigan's employees, businesses and citizens are becoming more mobile, require immediate access to services and demand higher levels of service than ever before. Meeting those needs head on, IS developed our mission. It contains long-range plans and tactical initiatives ranging from virtualization and green IT to statewide office automation, disaster recovery and remote worker capabilities.

We invite you to read through this document and experience firsthand Michigan's inaugural infrastructure strategic plan.

Our Mission

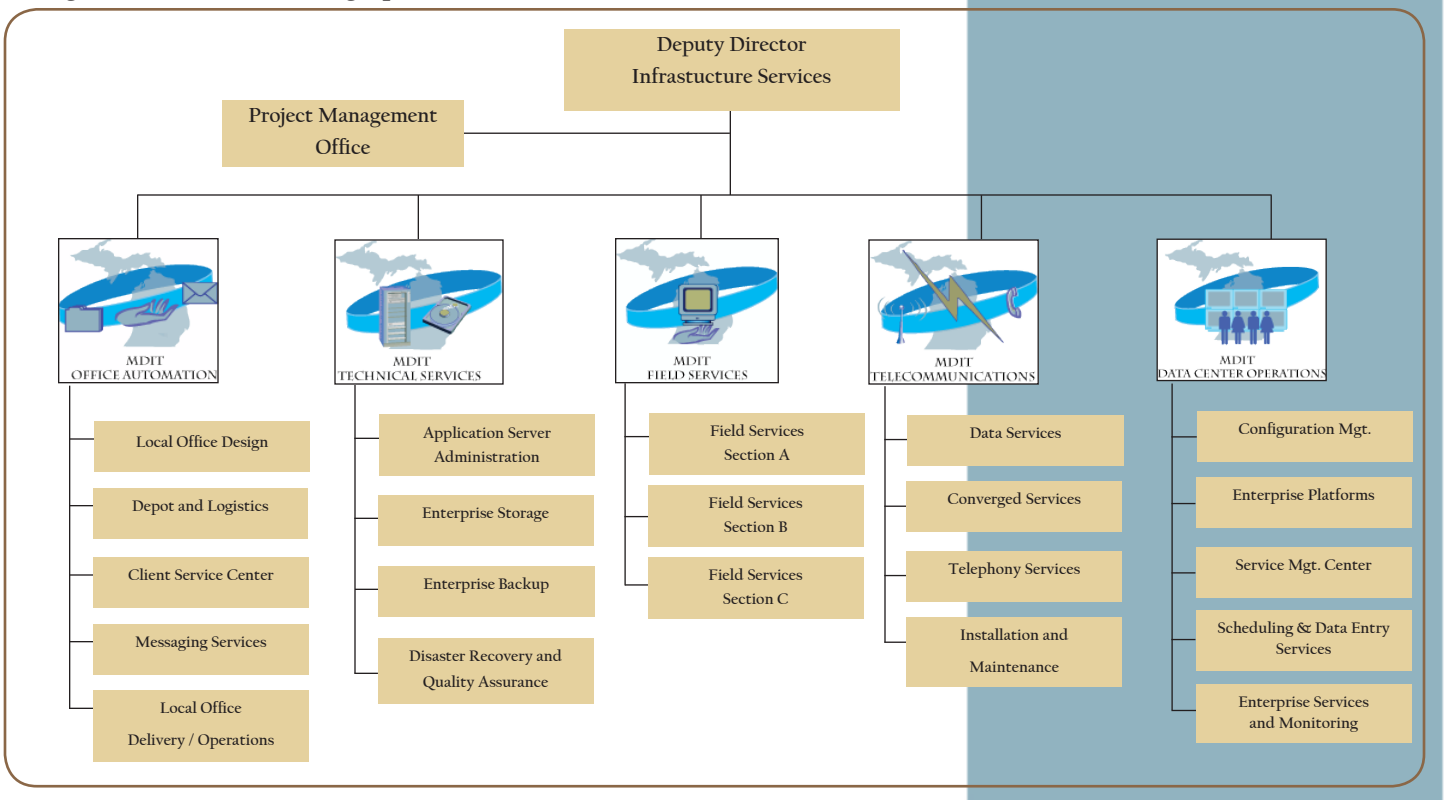
We are entrusted with our citizens' services 24 hours a day, 365 days a year.

We are expected to forecast the changing landscape of technology and deliver value with every project.

We are called to partnerships that make government more effective and energize our staff.

We lay the foundation of Michigan's future through technology.

We are MDIT Infrastructure Services.



G Infrastructure Services

Adding Value

"The Service Delivery Infrastructure Services specialist and the Technical Services manager are the resources our application development teams rely on the most for the continued hardware support of systems and they have done an excellent job supporting our clients."
-Juan S Chapa - Client Service Director supporting DLEG

"These guys know everything!"
- Feedback on Server Team 6

"...my thanks to the Backup and Recovery team for always going out of their way to assist me."
- Feedback on OA Delivery Services

"I would like to thank all involved in solving my Internet access problem.... You all do a great job every day."
- Department of Corrections Feedback on Saginaw Probation Remedy

Technical Services

The Technical Services (TS) Division of MDIT is the state's application system administrators. They support and maintain the infrastructure for more than 2,200 of Michigan's most critical servers. This team is tasked with keeping legacy systems running, while at the same time, providing innovative ways to deliver shared technology services across the state's 19 agencies. The state's massive 1.8 petabytes (one point eight quadrillion bytes) of storage, and backups and recovery of all centralized data, fall within its realm of responsibilities.

The mission of the division is to provide best-of-breed technologies for the supported operating environment so mission critical applications data requirements are met in a timely and cost-effective fashion.

Scope of Services

From the first piece of hardware needed to the last delivery of release code, Technical Service's 110 employees are a critical component of every software development launch. In partnership with Agency Services application development, this team delivers on milestones throughout all of MDIT's major projects (Bridges, BAM, CHAMPS).

From shared services, like the thin client center of excellence, to standardizing the state's call center environment, Technical Services is tasked with making Michigan's technology work securely and efficiently, every hour of every day. Technical Services is organized into the following groups:

- Application Support
- Enterprise Validation
- Enterprise Storage
- Enterprise Backup & Disaster Recovery

Top Initiatives	Milestones	
Continuous improvement of Technical Services operational efficiencies *Patch management, administrative account clean-up, end-to-end restore testing, backup and recovery governance model, capacity cleanup and optimization*	March 2009	Patch Management OS Base (Audit Requirements)
	December 2008	Administrative Account Cleanup
	June 2008	Backup Governance Model
	September 2008	Backup Hardware Upgrade
	June 2009	Backup Policy Cleanup
	September 2009	End-to-End Restore Testing
Emerging/specialized area technology support *Providing the back-end staffing and support processes for specialized technologies like thin-client servers and call centers.*	December 2008	Establish Matrix Teams Concept
	March 2009	Establish Policies & Procedures Manual for TS
	June 2009	Train Technical Services Staff on TS Policies & Procedures
Virtualization - Server and storage with green IT *Provide process, tools and controls for virtual server environments and establish a virtualization center of excellence*	**June 2008**	Server Virtualization Product Readiness
	December 2008	Storage Virtualization and Archiving
	December 2008	Implement Governance Structure
	December 2010	Statewide Adoption

Key Drivers and Actions

- **Service-Oriented Architecture (SOA) and Open Source Development:** The challenges of supporting application environments are increasing in size and complexity. More solutions are being developed in open communities where the infrastructure foundation is required to balance easy access with security and configuration management. Projects like Michigan's Business Improvement Initiative are pushing the boundries of our current technology and introducing integration middleware and the first statewide enterprise service bus. Once mature, these projects will be leveraged across the enterprise.
- **Consolidation:** Successful consolidation has placed increased demands on enterprise storage and backups, tripling the number of servers backed up and more than doubling the state's enterprise SAN. The team is re-architecting our solutions, maturing our support and allocation methods. Full virtualization of our storage is underway and a new backup solution has been scaled to meet current demand and scale well into the future.
- **Virtualization:** Increased demand means that Technical Services needs to use every spare cycle on our CPU's and conserve all the power possible. Working with our Department of Labor and Economic Growth, our administrators are piloting the state's first virtualization service for production systems. Using best practices, the team is defining the support methods and configuration disipline needed to maintain a complex, virtualized environment.
- **Security:** Attacks are on the rise and now, more than ever, standardized environments are critical to ensuring the state's data and systems remain secure. Technical services is leading the charge in MDIT and has developed standards for all new Unix and Windows servers. The team is also looking closely into standard processes and practices for the existing systems, implementing best practice settings across all our environments and removing unnecessary access.

Initiatives

The following initiatives will be developed and implemented over the next five years:

- **Enterprise backup and recovery improvement:** Restore policies, processes and quality assuance (QA); expand use of virtual tape library and migrate archives to read only storage
- **Security enhancements:** Patch management, operating system (OS) base lining, event log handling, administrative access control – implementation of separation of duties
- **Centers of excellence:** Citrix, virtualization, and server support for; call centers, identity management, document management, presentation services, database servers and other emerging technologies.
- **E-discovery infrastructure**: Support archiving solutions and implement separation of backup from archive
- **Define career path & staff development:** Improve civil services classifications to align with industry classifications; up-to-date technical training; succession planning
- **MiDEAL:** Extend negotiated discount levels for storage solutions and servers to locals
- **Testing lab modernization:** Patches, upgrades, restores and emerging IT research

Partners in Delivery

In carrying out these plans, resources will be utilized from across and beyond the Infrastructure organization. The teams involved include:

- Office Automation
- Office of Enterprise Security
- Agency Services
- All state agencies

Technical Services in Action

Managing Michigan's Storage & Back-up

Technical Services' Storage Management Section is providing storage solutions for servers located in the state's three Lansing-area enterprise hosting centers and the remote development sites.

The state's Storage Management Section is responsible for all aspects of the storage area network (SAN) and its' resources such as disk arrays, inter-site connectivity (including physical tape libraries) and virtual tape libraries.

To keep in lock step with storage strategic directions, backup infrastructure is continuously assessed for workload manageability and capacity improvements. Furthermore, a cross-organization Backup Action Team has been formed to provide governance on policies so the emerging needs such as e-discovery, tighter recovery point objectives (RPO) and recovery time objectives (RTO) can be managed in a proactive basis.

G Infrastructure Services

Adding Value

"The Videoconferencing services provided by Telecom have been instrumental in helping MDOT conduct internal and external meetings with staff and peers from around the world. This technology is viewed as a cost-savings model entwined with technology to have more staff participating in external meetings than what a travel budget or restrictions may allow, but equally important is the ability to utilize the technology as an integral business function in the future."

~ Brad Stoddard, Client Services Director supporting MDOT

"DLEG business operations distributed across the state can operate in a consistent manner without regard to location thanks to our highly reliable networks."

~ Don Eitniear, Client Services Director DLEG

The Telecommunications Service Catalog that Telecom publishes has a wealth of information on the types of services offered and the information required to order the services.

~ Tess Layman, Agency Services Director supporting DHS

Telecommunications

MDIT Telecommunications (Telecom) acts as the information superhighway and telephone company for state of Michigan executive branch agencies. By providing high-speed data communications and telephone services in support of the executive branch agency operations, Telecommunications enables government's successes and connects Michigan with services that are secure and reliable.

The challenge for Telecom is to create a nimble, responsive telecommunications framework that meets the short- and long-term needs of the state's employees and citizens. Governor Granholm's administration has set Michigan on the path of reinventing itself as a more efficient and effective government. This is reflected in Goal 3 of this IT strategic plan: Manage technology to provide better service and secure faster delivery. Telecommunications can be either the chief enabler or the biggest hurdle in meeting these IT priorities.

Scope of Services

With 83 employees, Telecommunications currently connects 55,000 state employees across 1200 locations and manages the telephones and networks for 27,000 state employees. This team runs the cable, installs the data line, brings the phone to your desk and supports your office. Telecommunications works to support tomorrow's strategic priorities and current agency business drivers. Its spectrum of services includes:

- Statewide IP network design and operations
- Internet-access design and operations
- Remote access to state network applications
- Statewide telephone and voice-messaging design and operations
- Call center telephony support
- Network security operations
- State telephone operators
- Cable and fiber between and within state office buildings - design and maintenance
- Video-/Audio conferencing management
- Cellular service contract management

Top Initiatives	Milestones	
Hosting center enhancements *Added bandwidth, virtual hosting center support, enhanced security*	December 2009	10 Gig to all Data Centers and add Virtual Switching Capability
	September 2010	Increased Security for Internet Applications
Fiber plant enhancement *Increase fiber capability and capacity*	September 2008	Additional Lansing-area Fiber Installations
	March 2009	Increase Number of Fiber Co-locations with Major Telecoms
Voice over Internet protocol (VoIP) and time-division multiplexing (TDM) *New voice technologies*	September 2009	Centralize VoIP Management
	September 2009	Unified Communication & Collaboration Tools in Place
	December 2010	50-75% Migrated
Strategic Telecommunications Training Plan	September 2008	Develop and Budget Role-based training plan
CSC Call Center Consolidation & Centralization *Standardize and combine call center implementation*	December 2010	Standardized/Centralization
	June 2012	VOIP Expansion Migration to New Technologies

Key Drivers and Actions

- **Convergence:** Increasingly, voice and data communications are converging into a single service. VoIP phones are replacing our plain old telephone service (POTS) lines with IP-based models that use the state's data network as their backbone. This reality has a dramatic impact on our state's strategy for communications. Demand for this service is on the rise as the voice-network infrastructure ages and agencies search for low-cost alternatives for providing the service. Telecommunications must balance this cost-cutting demand with the loss of the high reliability that exists in voice services. Our engineering teams are developing services that can offer our clients the best of both worlds. The trend toward convergence has already driven efficiencies like PBX consolidation and will ultimately result in telephony-based applications that are increasing in size, complexity and value.
- **The Remote Worker:** Wireless access from anywhere at anytime is the hallmark of MDIT's strategic plan. Whether it's enabling the mobile worker or meeting the imperative of pandemic planning; Telecommunications has a pivotal role to play. Wireless services have been piloted and will be rolled out across state facilities.
- **Service Management:** As a service organization, MDIT is coordinating its use of service applications such as Remedy and our monitoring tools. As these tools mature and their use in MDIT expands, Telecommunications processes will be affected and, as a critical step in delivering value to our citizens, internal processes will need to be reworked to increase the efficiency of all our teams.
- **Security, Capacity and Engineering**: The state's network is an ever-evolving enterprise. Every year applications and agencies require more bandwidth to get their job done. Our engineers are continually securing, re-working, optimizing and architecting for increased demands. These demands can come from large-scale development initiatives, changes in user needs (streaming video, etc.) or security threats. Telecommunications works in partnership with the rest of IS to stay one step ahead of the demand.

Initiatives

Initiatives for the 2008-2012 planning cycle are as follows:

- **Internet expansion:** Expand bandwidth for multi-media use and business services
- **Bandwidth upgrade:** Increase overall bandwidth in the wide-area network as well as the Lansing metropolitan network
- **E-911:** Allow access to 9-1-1 from all state phones
- **Unified communication & collaboration:** Leverage Internet protocol telephony (IPT) installations and standards to build Michigan's collaboration infrastructure
- **Voice consolidation and centralization:** Upgrade and consolidate private branch exchange (PBX) switches to save costs and increase agility
- **Rate simplification and rationalization:** Create user-friendly, telecommunications rated services
- **Enterprise-managed LAN migration:** Standardize local area network infrastructure
- **IP TV:** Multi-cast and multi-media aware networks - for training, video on demand, and videoconferencing
- **Unified Communications Strategy, Phase 2**: Integration to wireless communications, presence-aware communications systems

Partners in Delivery

In carrying out these activities, resources will be utilized from across and beyond the Infrastructure organization. The teams involved include:

- Technical Services
- Agency Services
- Office Automation
- Data Center Operations
- Enterprise Security
- Local governments

Telecom in Action

From Crisis to Convergence

Human crises present enough challenges without an antiquated phone system that is unreliable and virtually unmanageable. A basic Voice over Internet Protocol (VoIP) implementation eliminated this problem for DHS while laying the foundation for next-generation converged applications.

The first phase of the state's VoIP pilot has been completed which migrated 77 of the agency's 148 sites.

"I appreciate the new system," says Jan Baszler, DHS director for Clinton and Gratiot Counties, who calls the VoIP system "very customer friendly." She divides her time between offices in the two counties, and the VoIP system automatically locates and routes incoming calls to her. Callers don't have to figure out which office to call, and intercounty calls avoid toll charges by traveling across the wide area network.

"As a dual-county director, I deal with matters that need attention the day they occur," Baszler says. The VoIP system allows her to conduct such business "quickly and with no additional expense. I appreciate that, as does my budget."

StateTech Magazine
October/November 2007

G Infrastructure Services

Adding Value

The Field Services staff supporting MDE's School for the Deaf are so committed to supporting the client that they are cross-training in sign language to provide greater depth of IT support for the school. This is a great example of the customer-focused commitment that is growing in Field Services.

-Scott Thompson, Client Services Director supporting DOE

Field Services willingness to step outside the normal bounds works to build partnerships and create a positive image of MDIT.

-Beth Dean, Client Services Director supporting DOS

"The service tech was Mr. SUNSHINE. In my short time chatting with him, I got a great feeling about MDIT and the fun team he works with.

-Holly Grandy-Miller, Office of Great Workplace Development

Field Services

The Field Services Division (FS) is the department's face-to-face contact with the client, providing frontline services for end users throughout the state. Focusing on maximum productivity, Field Services strives for minimal user downtime and the most efficient use of state resources and staff.

While field service may appear to be a simple task, there may be no more critical business process to the effectiveness and efficiency of MDIT. Field Services often has a direct impact on consumer safety, statewide liability and customer satisfaction.

Among the several teams within Field Services is the newly-created Field Services Core Team (FSCT). The FSCT provides an enterprise view, setting standards for each of the regions, ensuring consistency in project development and promoting inclusion and empowerment among the three sections of Field Services.

Scope of Services

The Field Services Division has 195 people servicing the needs of Michigan's 55,000 state employees across the state. They provide on-site support, including desktop standardization and new equipment installs, along with support services to resolve client problems, requests and questions related to end-user computers and related equipment. They work closely with the Office Automation Team on server assessments, installing servers, switches and routers.

Field Services is defined by several flexible teams ready to meet the needs of customers across the state. For service purposes, Michigan is divided into nine, distinct geographical areas. Staff is divided among thirteen teams from which service is provided whenever and wherever it is needed.

Field Services is moving toward a matrix organization where the organization will have cross-functional knowledge and support, growth of individual staff and managers, a teaming concept to meet the needs of our clients and the ability to leverage resources to meet changing needs.

Top Initiatives	Milestones	
Service Improvements *Redefine statwide service model and responsibilities*	June 2008	Creation of Field Services Core Team
	June 2008	Finish MI Support Documentation
	December 2008	Field Services Operations Manual
Leverage Success of M/1 *Incorporate desktop consolidation success to drive efficiency in daily work*	M/1 Rollouts: April 2008	DHS (Except Central) complete
	May 2008	DMB/DLEG complete
	May 2008	MDE complete
	April 2008	DEQ complete
	April 2008	Re-starting DNR
Leverage Staff *Re-align geographic regions/sections for better service delivery*	March 2008	Communication Plan
	April 2008	Plan is Effective
	June-Sept. 2008	Follow-up
Staff Development *Develop, reward and train staff; incorporate agency empowerment training*	December 2008	Plan developed

Key Drivers and Actions

Remote Worker: Demands for wireless offices and the increased prevalence of mobile devices will ultimately expand the role of the Field Services technician. As these devices become commonplace in the technical landscape of our remote offices, Field Services will need to rise to the challenge to provide support for multiple channels of accessing the state's applications. Training programs and formal support guidelines will be developed.

PC Leasing: MDIT will pilot its first, statewide PC leasing service in 2008. Leasing will bring rigid install requirements that will require our Field Services team to compress their install times to less than 5 days on orders up to 2000 units. Managers have worked to streamline the install process, and increase the information collected up front, to accommodate a program that will save agencies sorely-needed operational dollars.

Remote Support Enhancements: As MDIT defines its new service management approach, Field Services will have the opportunity to arm its technicians with complete service history, technical reference and dynamic troubleshooting guides at the technician's fingertips. By adopting advancements in the tools available, diagnostic time can be greatly enhanced, remote office inventories updated and the time to resolve problems decreased.

Initiatives

Initiatives for the 2008-2012 planning cycle are as follows:

- Problem resolution improvement: Improve response time to outages, equipment failures, and virus attacks
- Warranty repairs: Redefine warranty repair process to deliver same-day service
- New equipment installs: Enhance procurement/leasing processes to complete installation in five days (FS); new deployment process; Corrections leasing pilot (2000 PC's); problem resolution

Partners in Delivery

In carrying out these activities, resources will be utilized from across and beyond the Infrastructure organization. The teams involved include:

- Office Automation

Field Services in Action

M/1 Standardization in Progress!

When it comes to standardizing state government's computing enivonment, the Field Services Division is moving Michigan forward at a fast clip. The M/1 Adopt initiative is a statewide push to consolidate 19 different computing environments into a standardized, enterprise framework.

By reducing the number of systems supporting basic enterprise computing functions, such as directory services, file and print environments and desktop environments, costs are reduced and service levels improved.

To date, 18,000 workstations have been standardized—as many as 1,000 in a single week—with complete standardization targeted by the end of 2009.

G Infrastructure Services

Adding Value

"HURRAH for DIT service! Even though my Excel document was corrupted, someone found the previous version which I can now work from. THANK YOU, THANK YOU, THANK YOU!!!"
- Carol Twiss, MCSC

The tech was courteous, efficient and went that extra mile to get problem resolved quickly. Nice dealing with people of that caliber. Thank you!"
- Shirley Johnston, Michigan Department of Corrections

"You guys are awesome! I had two issues this morning with passwords and received excellent assistance. Thanks for all you do!"
- Bonita Fritz , Michigan Department of Corrections

"We are fortunate to have Office Automation on the front line of DIT's customer service model."
- Dave Borzenski, Client Services Director supporting Treasury

Office Automation Services

The role of MDIT's Office of Automation Services (OAS) is to bring Michigan government onto a common technology playing field. With over 61,000 desktops and 900 applications in operation, OAS is charged with transforming and simplifying the state's technology architecture and creating a centrally-supported, enterprise-wide, common office.

Standardization and shared tools are driving themes for OAS in its efforts to move Michigan closer to the consolidation finish line.

Scope of Services

With 175 employees, OAS' reach extends across the spectrum of state government and includes its ongoing push to provide a single desktop environment that supports all the business needs of the different state agencies and departments. They are the voice of MDIT and are responsible for the consolidated IT Client Service Center (CSC). The pairing of customer service with the organization responsible for delivery of remote support tools ensures that the service center receives the very latest tools in their quest to increase first call resolution.

Its services also include in-depth engineering that designed and updates the automated provisioning environment that allows for monitoring, distributing, patching and upgrading desktop software anywhere in the state on-demand.

In addition, OAS provides the development and support of wireless solutions, engineers the state's consolidated e-mail systems, technical training and an inventory depot for the most effective tracking and delivery of equipment, The organization is comprised of the following units: Administrative Applications; Client Service Center; Computer Help & Training; Depot; Design & Delivery; Messaging; MIPRINT Services; Service Delivery; Technical Training; and Wireless Support

Top Initiatives		Milestones
Remote / mobile workers *Expand support and infrastructure to enable Michigan's mobile workers*	August 2008	Endpoint Security Monitoring Mode
	August 2008	Implement the first release of Next Generation Laptop
	October 2008	Convert VPN Users to Soft Token
	December 2008	Provide Field Services support for Next Generation Laptops
	March 2009	Implement Data Encryption
	March 2009	SCCM Internet Support
M/1 ADOPT *Standardize state of Michigan's office infrastructure*	Nov. 2008	Attorney General's Office migrated (860)
	March 2009	30-35,000 Desktops migrated
	October 2009	Corrections migrated (8,500)
	December 2011	All agencies migrated to M/1
Customer service improvement *Increase help desk first call resolution to 75% and implement automated password reset*	October 2008	Implement an e-mail response management system
	October 2008	Implement 2nd level support at CSC
	March 2009	Automated password reset and network e-mail
	March 2010	Implement Knowledge Base
	October 2009	Implement Self-Service portal

Key Drivers and Actions

Remote Worker: The state must plan for new threats such as pandemic flu and, in these budget conditions, every measure must be made to reduce travel and allow our workforce to complete their workflows while still in the field. The demand for mobile applications delivered on cell phones and PDA is on the rise and our state police have begun to use Blackberries as their access point for background checks. These realities have driven our OAS architects to develop new solutions for the mobile worker. Working hand in hand with Telecommunications, OAS has developed a model that takes the state office on the road and allows our workforce the flexibility it demands.

E-Discovery: Across the nation, the legal demand for immediate access to electronic mail, stored documents, data and systems output has never been greater. In this business environment the stakes for getting e-discovery right are high. Our OAS engineers are working on part of that solution with our Agency Services partners, we are developing solutions that will allow IT and legal organizations to search and retrieve content instantly. Transforming manual processes into an enterprise asset that lowers discovery costs, improves litigation support and enables internal investigations.

Security: The papers are riddled with stories of stolen identities as the result of lost or stolen PC's and laptops. In recent years Michigan has twice been the victim of well-meaning employees introducing viruses into our network after remote equipment was brought back from the field. OAS has worked with the Office of Enterprise Security to develop a comprehensive program of standardization, endpoint and encryption solution to protect against hackers, malware, protocol attacks and more, keeping security invisible to the end user. This offering will be available to all standard Office environments.

Standardization: All of the drivers above lead to one inevitable conclusion. To deliver the services needed in Michigan's immediate future, the state office must be standardized, streamlined and highly controlled. The key to being responsive to business needs is to understand each and every component of the solution. The MI/1 ADOPT project is making this level of service a reality. OAS is moving rapidly through the state consolidating and standardizing file and print services, the desktop itself and security solutions for each and every state worker.

Initiatives

Initiatives for the 2008-2012 planning cycle are as follows:

- Endpoint security: Implement secure solution for mobile devices
- Asset management: Improve infrastructure asset inventory capability
- Data consolidation to M/1 Windows cluster: Enhance and complete file and data migration to centralized solution
- Implement e-mail archiving solution
- Select archiving solutions
- Identity management: Create user provisioning at the help desk
- E-mail security: Virus protection within e-mail system enterprise wide

Partners in Delivery

In carrying out these activities, resources will be utilized from across and beyond the Infrastructure organization. The teams involved include:

- Office of Enterprise Security
- Data Center Operations
- Telecommunications
- Client Service Center
- Field Services
- Local government partners

Office Automation Services in Action

Award-winning email consolidation

After years of scrambling to meet increasing messaging expectations, Michigan found itself in the same situation many states face: aging infrastructure and a complex maze of solutions that impeded communication and resulted in unnecessarily high costs.

Through the E-mail Consolidation Project, MDIT enabled strategic priorities, brought stakeholders together, defined a common messaging platform and implemented a cost effective solution.

Dividends of the investment include: Projected savings of over $11 million in 4 years; a 50 percent increase in service levels and response time; enhanced security and resistance to virus attacks; and reallocation of over $1.8 million in personnel costs.

Solving this dilemma required an understanding of the departmental business value of e-mail as well as development of a strategy supporting specific needs, while maintaining an enterprise focus.

By showing the alignment to business priorities outlined in the Governor's Cabinet Action Plan, and collaborating early, MDIT developed its approach with the benefit of agency support.

Excerpt from the National Association of State CIO's (NASCIO) "2006 Best Practices in the Use of Information Technology in State Government"

G Infrastructure Services

Adding Value

"It is readily evident that Data Center Services understands the critical nature of the child support hardware/software environment. There have been multiple occasions where DCO and IS staff have stepped up to either help avoid or to restore a loss of service to our clients. By all accounts, they will own the problem and make every effort to attain a rapid, low impact solution."

- Jim Fricke, Client Services Director supporting CSES

Hosting Center Facts

One of the tape cartridges used by DCO (the 9840) can store almost 500 GB of data. If we were to use reel-to-reel tape from the 1950's to store that much data, the stack of reels would be 15 times the height of the 1,000-foot tall Eiffel Tower!

The state's hosting centers store around 1.8 petabytes (PB) of data. Two PB holds all of the contents of the U.S. academic research libraries,

There is currently over 30,000 square feet of raised floor environment in the state's data centers.

The state has 5 critical mainframes.

The Mainframe Consolidation project will avoid $12 million over five years in reduced hardware maintenance and software licensing costs.

MDIT
DATA CENTER OPERATIONS

Data Center Operations

Data Center Operations (DCO) is responsible for providing centralized hosting services for all of Michigan's state agencies. This includes the acquisition of hardware and software, operational and technical support for a variety of mainframes and over 2,000 servers. DCO monitors system performance and recommends improvements to achieve the highest security, performance and responsiveness. With an ITIL-based service delivery organization—IT Infrastructure Library—employees are trained and organized into groups based around the following:

- Service Management Center: Problem management and incident management
- Enterprise Monitoring: Responsible for enterprise monitoring
- Configuration Management: Responsible for comprehensive CMDB and best practices
- Facilities Management: Oversees the data center facilities

Scope of Services

DCO strives for consistency and works toward consolidation whenever possible. They utilize skilled staff to provide cost-effective IT services by managing and maximizing the power of technology and processes. DCO manages the Information Technology Infrastructure Library (ITIL) which contains incident, change, configuration and release management processes, as well as enterprise monitoring services, media library services, mainframe technical services and disaster recovery service.

Additionally, as Michigan moves forward with new technology, DCO continues to bridge yesterday's technology to today's needs through its legacy operations, thereby ensuring sustained service – all day/every day – across state government.

Top Initiatives	Milestones	
Enterprise monitoring *Rollout/consolidation of tools and staff*	September 2008	**Aperture**
	September 2009	**Enhance the CMDB**
	September 2009	**Automated Server Polling (ASCID)**
	September 2009	**Enterprise Monitoring Consolidation/STD**
	December 2008-11	**Data Center Enhancement Request Green IT**
Enterprise monitoring *Legacy platform management*	December 2005	**13 (M/F)**
	December 2008	**Migrate Data Exchange Gateway**
	December 2009	**Develop Data Warehouse Strategy**
Implement continuous quality improvement recommendation	May 2008	**Solutions Engineering–IMAC**
	October 2009	**ITIL (Mature) Process**
	March 2009	**Develop Service Catalog**
Disaster recovery process *Build disaster recovery process for critical applications*	September 2008	**Identify Infrastructure Assoc.**
	March 2009	**Identify Process, Staffing and Funding**
	September 2008	**Complete Assessment**
	December 2008	**Implement Tools, Identify Apps.**

Key Drivers and Action

- **Green IT:** With major successes in our consolidation efforts, IT discussions of cost savings have evolved to concerns over energy efficiency. Faced with the issue of an energy-efficient data center, DCO staff are looking for ways to optimize the state's computing environment to benefit the taxpayer's bottom line and our planet. Consistent improvement that drives updated equipment standards, facilitates best practices and continues to evolve as new solutions are being developed.
- **Disaster Recovery Planning:** DCO's hosting centers house nearly 50 applications considered our state's most critical business functions. Agency Services and DCO teams are mapping critical systems functions ranging from law enforcement to those that keep our food supply safe. The critical nature of these systems demands a full analysis of our ability to recover from an outage and an ongoing commitment to maintain our capabilities.
- **Monitoring and Control:** Today we are faced with a complex network of disparate monitoring tools and capabilities. DCO has taken the lead, working with Enterprise Architecture and all of IS, to develop solutions that bind our service management strategy together and give our technical support staff a clear view of daily operations.
- **ITIL Maturation:** DCO is organized and trained around ITIL components: incident management, problem management, change management, release management and configuration management practices. Today's challenge is to mature and extend the reach of ITIL practices to all of IS and to integrate these processes with the SUITE framework across MDIT.

Initiatives

Initiatives for the 2008-2012 planning cycle are as follows:

- **Transform current data centers:** Improve, upgrade and expand capabilities of Michigan's current hosting centers to make them more agile/flexible and adjustable
- **Service catalog:** Refine the suite of standard infrastructure services and rates
- **Solutions engineering:** Streamline server configuration, procurement and release
- **ITIL implementation:** Implement and refine processes for incident, change and release management
- **Green IT:** Reduce power consumption and implement green standards
- **Configuration management:** Maintain configuration management database and refresh wiring standards
- **Data center enhancement request:** Set the course for Michigan's future data center needs
- **Legacy platform management:** Improve and integrate Michigan's mainframe and legacy technology

Partners in Delivery

In carrying out these activities, resources will be utilized from across and beyond the Infrastructure organization. The teams involved include:

- Agency Services
- Field Services
- Office of Enterprise Security
- Telecommunications
- Technical Services
- Office Automation

Data Center Operations in Action

Award-winning consolidation

Centralization and consolidation are hardly new topics to state government. What is new and interesting is the scope of consolidation that is now possible and the significant savings and government transformation that are being realized. The critical ingredient to this level of success—at least in the Michigan example— has been collaboration....

Specific benefits of Michigan's Data Center Consolidation are well documented: $9.5 Million saved to date (with an estimated 5-year ROI of $19.1 million); elimination of over $375,000 a year from facilities environmentals and leased space cost; savings of $403,000 per year in hardware maintenance cost; avoidance of $7,313,245 in capital costs to upgrade legacy data centers/computer rooms; and 29,062 square feet of floor space regained

But the ROI is only half the story.

Michigan's successful efforts of the past—mainframe consolidation, telecommunication consolidation and the print center consolidation projects—were all accomplished with clear, imperative and visible executive mandate (in the form of an Executive Order from the Governor). But what happens when the mandate cools, when the urgency fades and agencies begin to tally the costs? Consolidations of this magnitude are measured in terms of years, not months....

In the end, the collaborative approach is what has seemed to matter the most. A commitment to collaboration has given Michigan a technology climate where agencies now openly request to get their remote locations closed. The project team now has a waiting list of locations targeted for closure. This approach has helped cement a reputation for quality, built trust with clients, and set the stage for more fundamental initiatives that reach across government boundaries such as virtualization, SOA, and shared services.

Excerpt from the National Association of State CIO's (NASCIO) "2007 Best Practices in the Use of Information Technology in State Government"

Infrastructure Services Alignment

Our philosophy in Infrastructure Services is that strategic planning must be done as a holistic activity. Every project we undertake is an opportunity to move the state one step closer to its goals; one more brick laid in tomorrow's technical foundation. Each plan developed is done with a purpose, aimed at a long-range objective for the state. These objectives are articulated in the MDIT Strategic Plan and serve as the basis for all infrastructure planning. Included in the pages below you will find the alignment of every initiative outlined in our plan.

To develop our plan and enable this alignment, in March of 2008, IS managers met with representatives from the governor's office, Enterprise Security, Enterprise Architecture and Agency Services in a two-day, off-site workshop to look at the issues, challenges and solutions through the eyes of our customer agencies. The workshop challenged us to look at leadership though new eyes and find ways to better communicate with each other on critical issues of innovation, process and management.

1 Access	2 Service	3 IT Management & Infrastructure
Green IT	Hosting Center Enhancement	Fiber Plant enhancements
Configuration Management	Bandwidth Upgrade	Asset Management
Enterprise Monitoring	Call Center Consolidation	Standardize state's office infrastructure
New Data Center Request	E-911	Data Consolidation to M/1 Windows Cluster
Legacy Platform Management	Problem Resolution Improvement	Implement E-mail Archiving Solution
Transform Current Data Centers	IT Service Management	Automated Password Resets
Disaster Recovery	Improve availability and recovery of critical systems	Identity Management: user provisioning
Internet Expansion		Increase Help Desk first call resolution
Remote/Mobile Workers		Enterprise Backup and Recovery Improvement
Endpoint Security		Implement Security Enhancements: Patch Management, OS Base lining, Event log handling, Administrative access control
Enterprise Mobile Device Data Encryption		Centers of Excellence
		E-Discovery Infrastructure
		Refine service catalog standards and rates
		Solution engineering for server configuration and procurement
		ITIL implementation
		Service improvements
		Leverage desktop consolidation success
		Redefine warranty repair process
		Improve new equipment install process
		Unified Communication and Collaboration
		Voice Consolidation and Centralization
		Rate simplification and rationalization
		Enterprise-managed LAN

For two days, the combined management team worked in small groups to clarify goals and prioritize initiatives. They aligned our team's priorities with the goals of the state and the MDIT strategic plan. During the workshop, our leaders considered some important questions;

- What direction are the services we provide moving globally?
- How does my work support the goals of the governor?
- What do the other infrastructure teams need from me?
- What does it mean to be a leader and what can I do to be a better one?

These questions and this workshop drove the alignment between infrastructure activities and MDIT strategic goals as illustrated below.

4 Great Workplace	5 Cross-Boundary Solutions	6 Innovation & Transaction
Leverage Staff Develop Telecommunications Training Plan Define Career Path Technical Training and Development Plans	MiDEAL: Extend negotiated discount levels for telecommunications, storage solutions, servers and software to other state and local governments	E-mail Security Virtualization Testing Lab Modernization Backup Enhancements IP TV: Multi-cast and multi-media aware networks Virtual Call Centers Unified Communications Strategy Phase 2

Michigan 2008-2012 *Strategic Goals*

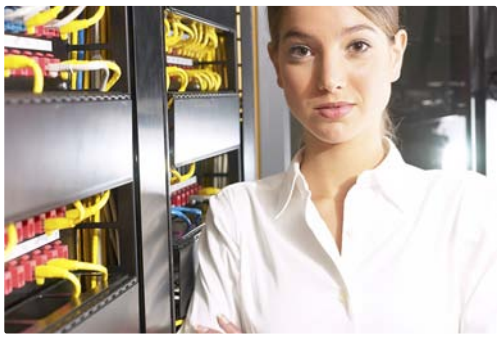
Goal 1	Access: Expand Michigan's services to reach citizens and businesses anytime, anywhere.
Goal 2	Service: Deliver efficient and effective technology services and shared solutions to the agencies.
Goal 3	IT Management and Infrastructure: Improving operations, security and reliability through statewide solutions and universal standards.
Goal 4	Great Workplace: Support a high-performance workforce.
Goal 5	Cross-Boundary Solutions: Foster partnerships across and beyond state government.
Goal 6	Innovation and Transformation: Drive innovative processes and technologies to transform Michigan's government service.

Infrastructure's Magnificent Milestones

- Consolidated 70 e-mail versions to 7
- 700 e-mail servers merged into into 70 centrally-hosted and maintained servers
- 29 data hosting centers consolidated to 3 state-of-the-art, secure data centers
- 7,000 DHS lines converted to VoIP technology at 80+ different locations
- 18,000 desktop workstations standardized with more to come

History in the Making: A Shared Infrastructure

Standardizing technology is a daunting task, to say the least, but that is what Michigan took on, both figuratively and literally, in the 1980's when the state ambitiously targeted shared technology across government.

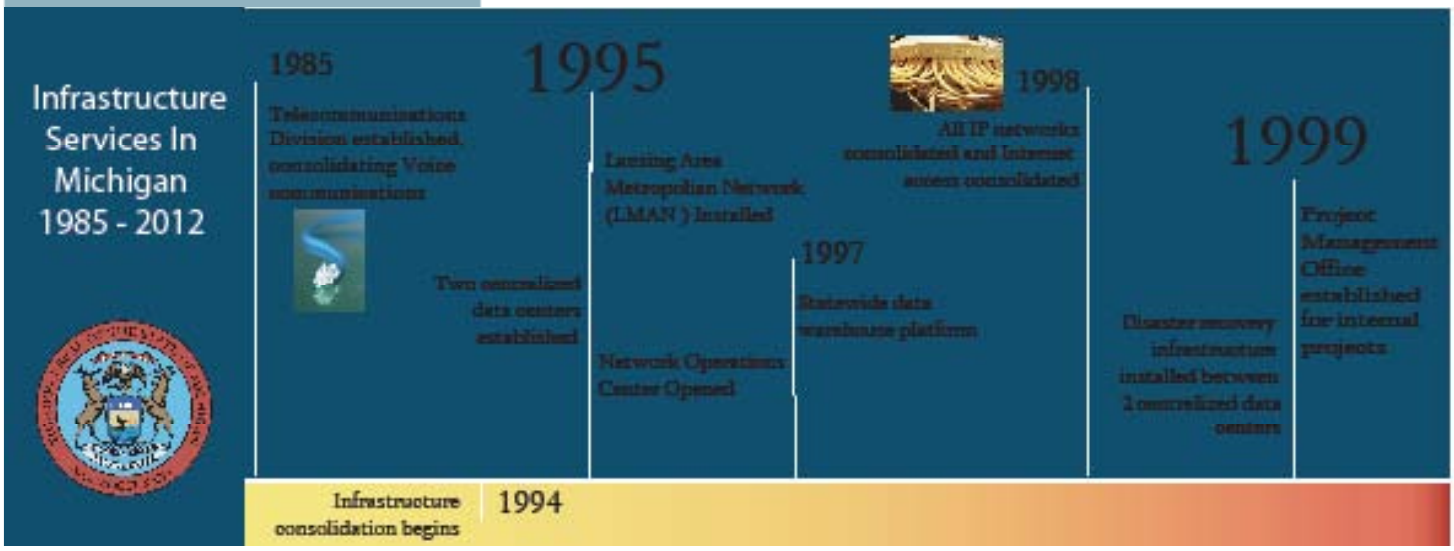


The complexity of the environment was incredible. Data within the state were stored on myriad devices in numerous formats, across so many data centers that no one could get an accurate count. With executive support at the gubernatorial level, the first generation of consolidation began to take shape around the state's network. Once success was underway in the communications arena, the focus shifted to mainframe centralization.

In 2001, MDIT was created by Executive Order to completely centralize the state's IT resources into an enterprise-managed department. Over 1,600 IT employees were re-assigned from the agencies they had worked in, and whose business they knew, into this new department.

Business was to change, but no roadmap was provided. Customers and employees were not shown how their needs would be met or what measurable benefits would be achieved by this new department. A huge cultural change was required for this enterprise approach, but the organization was not defined; roles and responsibilities not articulated and operations continued to function in their de-centralized manner. During the initial days of the consolidation the state's employees continued to get the job done despite the fact that there were many organizational questions unanswered. Working (and sometimes stumbling) together, the vision for MDIT rapidly took shape, strategic plans were developed that aligned with the governor's Cabinet Action Plan and progress began to come in waves.

Michigan successfully consolidated 70 e-mail versions to 2 and merged 700 e-mail servers throughout the state into 70 centrally-hosted and maintained servers. By year-end 2007, data were moved from 29 different hosting locations to 3 state-of-the-art, secure data centers where massive amounts of data are now stored, utilized and monitored. And in telecommunications, Michigan took a monumental step forward with the successful implementation of VoIP within the Department of Human Services where 7,000 lines were converted to VoIP technology at over 80 different locations.



Infrastructure Services teams are proud stewards of the legacy left us by those who have come before, each generation adding building blocks for the next and building a heritage of excellence that has spanned nearly three decades. Our chapter in this story will reach further and dig deeper than ever before. This is truly a defining moment for IT in Michigan. It is no accident that today we stand so close to the finish line. Every project, every process improvement and every difficult decision made has brought us to this point. It has been a long road and our teams have made mistakes along the way, but the commitment to learn from them and to create a better future has always prevailed. We did not make the promises of consolidation made so long ago, but we will be the team to deliver.

Our consolidation journey has taught us much about the barriers that lay ahead. In Michigan, our strategic next steps are clear - to expand beyond the traditional borders of government and lead the way toward true partnership with our businesses, local governments and fellow states. More than ever before we stand on the cusp of realizing the true promises of e-government.

Commonly held myths were dispelled:

Myth #1: Consolidation costs too much

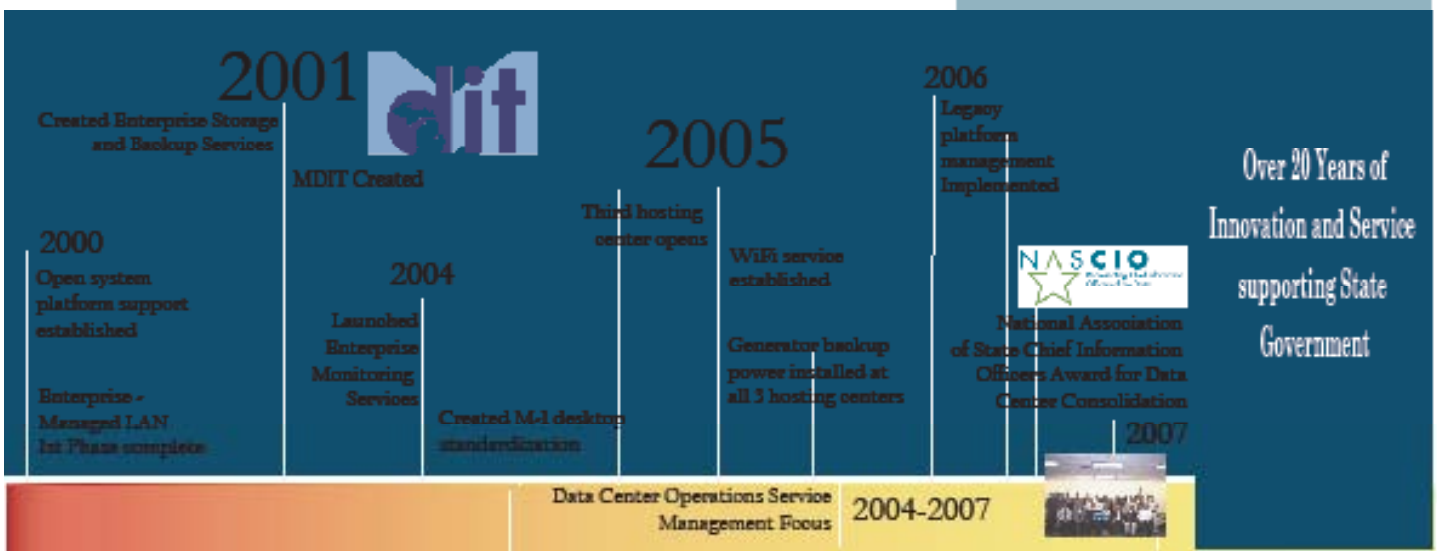
The need to reduce costs has been the primary reason our consolidations were successful. Our teams have found ways to make progress within the tightest budget conditions in our state's history.

Myth #2: There are too many federal and legal requirements

Our consolidated services and hosting centers have met every technical and legal requirement thrown at them. The rated service models developed for our IS organization have passed federal guidelines and have created a financially-viable structure based on business demand.

The barriers of the past can be overcome, but we face additional hurdles as we continue to stride toward cross-boundary collaboration and government transformation. They boil down to two issues: trust and fear of losing control.

There are no quick fixes to effectively deal with these issues. Infrastructure Services must first PROVE that our teams have instituted operational excellence. We have come along way, but there is much further to go. If the State of Michigan is to be the catalyst for collaboration among cities, counties and municipalities, our organization must be the very model of disciplined, uniform and repeatable excellence. Our challenge is to answer our critics and the fear of the unknown with credible facts, objective metrics and undeniable customer service.



Start by doing what's necessary, then do what's possible, and suddenly you are doing the impossible.

- St. Francis of Assisi

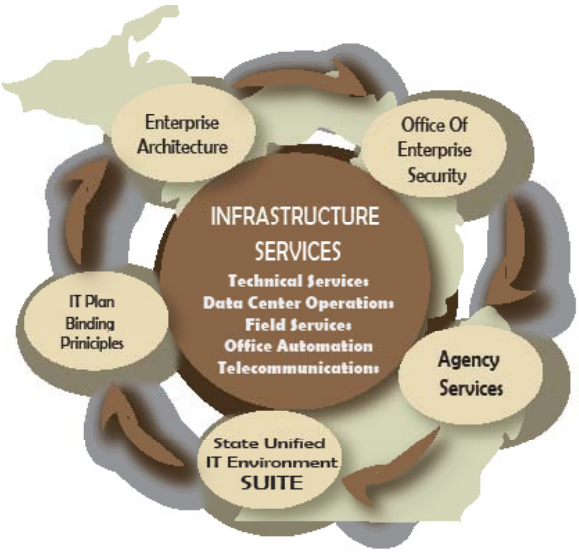
Implementing the Plan - From Vision to Action

Making this plan a working document requires more than simply listing initiatives and proclaiming a vision. The process started with the Cabinet Action Plan, a statement of the governor's business priorities. The business priorities drive budget decisions, plans and timelines for the entire executive branch of Michigan's government. From this point came the MDIT statewide IT plan which translated business imperatives over a five-year period into actionable projects.

It is this detail that serves as a primary source of information in our Infrastructure planning. Our goal during the IS strategic planning process was to combine inputs and priorities into a forecast of demands on the infrastructure we support. By fully aligning our work toward the goals of the MDIT statewide IT plan with an understanding of the technology trends global government is facing, we are ensuring that our teams will be ready to support the demands of tomorrow.

Forecasting and alignment were the next step. The five Infrastructure Services teams provide the State of Michigan with an organizational structure that can promote excellence and specialization, but can also lead to a myopic view of the work we must accomplish. This specialization, while essential, presented a true hurdle in creating a dynamic understanding of our team's strategic direction. Bringing everyone onto the same page was critical.

Elevating this document of good ideas and priorities into an actionable plan will require commitment, collaboration and effort. The nature of our business means that we must remain open to changes in the capabilities of technology. The realities our state faces mean that we must remain committed to understanding the evolving needs of our citizens and the government that supports them. Our process will engage and repeat a cycle of consistent improvement. This plan is the first of its kind for our state, but it will not be the last.



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